

Access DB# 135584

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: HENRY HU Examiner #: 79349 Date: 10-20-04  
Art Unit: 1713 Phone Number 301-272-1103 Serial Number: 10-660437  
Mail Box and Bldg/Room Location: AU1713 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Fluoroelastomers having low temperature characteristics and solvent resistance

Inventors (please provide full names): Harald Kasper, Klaus Hentzen, Guy Goss  
Allan Worm, Tetsuo Fukushi, Fray Marg

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search the tetrapolymer having <sup>only</sup> the four monomer units

- of
- (A) tetrafluoroethylene  $\begin{matrix} F & & F \\ & \diagdown & / \\ & C = C \\ & / & \diagdown \\ F & & F \end{matrix}$  (or TFE)
  - (B) vinylidene fluoride  $\begin{matrix} F & & H \\ & \diagdown & / \\ & C = C \\ & / & \diagdown \\ F & & H \end{matrix}$  (or VDF,  $V_2F$ )
  - (C)  $CF_2 = CF - O - CF_2 - CF_2 - CF_2 - OCF_3$  (or MV31)
  - (D)  $CF_2 = CF - OCF_3$  (or PMVE)

see copy of claim 1



# STIC Search Report

## EIC 1700

STIC Database Tracking Number: 135584

TO: Henry Hu  
Location: *Rem 10A20*  
Art Unit : 1713  
October 22, 2004

Case Serial Number: 10/660437

From: Kathleen Fuller  
Location: EIC 1700  
REMSSEN 4B28  
Phone: 571/272-2505  
Kathleen.Fuller@uspto.gov

### Search Notes

I searched the 4 compounds as component registry numbers of a polymer. There were only 2 polymers with all four and 1 CA reference. Unfortunately each polymer had one or two extra components.

I also showed you the applicant and how CA structurally indexed the application. The structure components of the polymer are a little different from what you wanted..

Then I searched the 4 compounds as starting monomers. There were 2 references. One may be good but the priority date and one of the applicants are the same as on your application.

=> FILE REG

FILE 'REGISTRY' ENTERED AT 11:04:23 ON 22 OCT 2004

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 20 OCT 2004 HIGHEST RN 766487-31-4

DICTIONARY FILE UPDATES: 20 OCT 2004 HIGHEST RN 766487-31-4

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:

<http://www.cas.org/ONLINE/DBSS/registryss.html>

*Component registry numbers for*

=> D QUE L11

L7	4370	SEA FILE=REGISTRY ABB=ON	116-14-3/CRN	TFE
L8	2183	SEA FILE=REGISTRY ABB=ON	75-38-7/CRN	VDF
L9	16	SEA FILE=REGISTRY ABB=ON	40573-09-9/CRN	MV 31
L10	289	SEA FILE=REGISTRY ABB=ON	1187-93-5/CRN	PMVE
L11	2	SEA FILE=REGISTRY ABB=ON	L7 AND L8 AND L9 AND L10	

=> D L11 1-2

*only 2 polymers has all four components, unfortunately each polymer has a 6th or 5th component*

L11 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2004 ACS on STN  
 RN 346607-79-2 REGISTRY  
 CN 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tri-2-propenyl-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Ethene, 1,1-difluoro-, polymer with 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene, trifluoro(trifluoromethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)  
 CN Ethene, tetrafluoro-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene, trifluoro(trifluoromethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)  
 CN Ethene, trifluoro(1,1,2,2-tetrafluoroethoxy)-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(trifluoromethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)  
 CN Ethene, trifluoro(trifluoromethoxy)-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-

(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)

CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)-, polymer with 1,1-difluoroethene, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene, trifluoro(trifluoromethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)

OTHER NAMES:

CN 2-Bromo-1,1,2,2-tetrafluoroethyl trifluorovinyl ether-perfluoro(methoxypropyl vinyl ether)-perfluoro(methyl vinyl ether)-tetrafluoroethylene-triallyl isocyanurate-vinylidene fluoride copolymer

MF (C12 H15 N3 O3 . C6 F12 O2 . C4 H F7 O . C3 F6 O . C2 H2 F2 . C2 F4)x

CI PMS

PCT Fluoropolymer, Polyvinyl

SR CA

LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

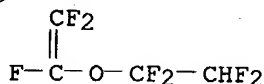
DT.CA CAPLUS document type: Patent

RL.P Roles from patents: PREP (Preparation)

CM 1

CRN 63391-81-1

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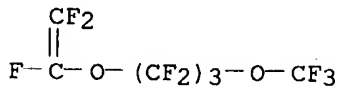


*eptra*

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CRN 40573-09-9

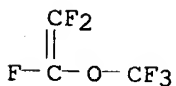
CMF C6 F12 O2



CM 3

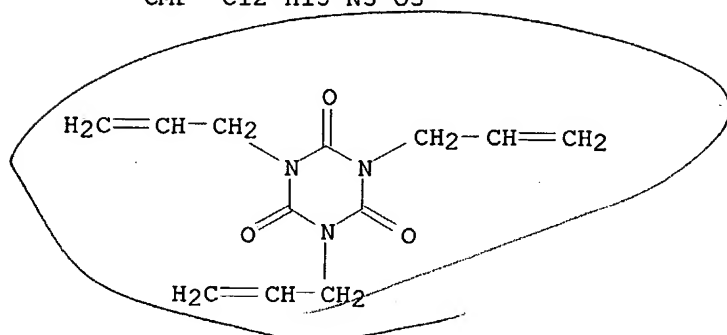
CRN 1187-93-5

CMF C3 F6 O



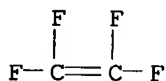
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CRN 1025-15-6  
CMF C12 H15 N3 O3



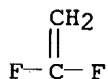
CM 5

CRN 116-14-3  
CMF C2 F4



CM 6

CRN 75-38-7  
CMF C2 H2 F2



1 REFERENCES IN FILE CA (1907 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L11 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2004 ACS on STN

RN 346607-77-0 REGISTRY

CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)-, polymer with 1,1-difluoroethene, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Ethene, 1,1-difluoro-, polymer with 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI)

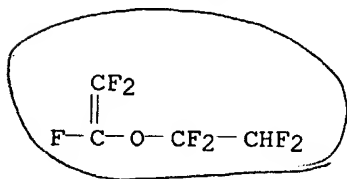
CN Ethene, tetrafluoro-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI)

CN Ethene, trifluoro(1,1,2,2-tetrafluoroethoxy)-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-

(trifluoromethoxy)propane, tetrafluoroethene and trifluoro(trifluoromethoxy)ethene (9CI)  
 CN Ethene, trifluoro(trifluoromethoxy)-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene and trifluoro(1,1,2,2-tetrafluoroethoxy)ethene (9CI)  
 MF (C6 F12 O2 . C4 H F7 O . C3 F6 O . C2 H2 F2 . C2 F4)x  
 CI PMS  
 PCT Fluoropolymer, Polyvinyl  
 SR CA  
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL  
 DT.CA CAplus document type: Patent  
 RL.P Roles from patents: PREP (Preparation); PROC (Process)

CM 1

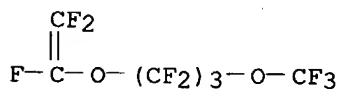
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*extra*

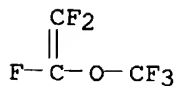
CM 2

CRN 40573-09-9  
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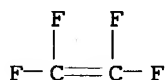
CM 3

CRN 1187-93-5  
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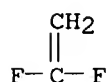
CM 4

CRN 116-14-3  
 CMF C2 F4



CM 5

CRN 75-38-7  
CMF C2 H2 F2



1 REFERENCES IN FILE CA (1907 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> FILE HCAPLU  
FILE 'HCAPLUS' ENTERED AT 11:05:10 ON 22 OCT 2004  
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FILE COVERS 1907 - 22 Oct 2004 VOL 141 ISS 17  
FILE LAST UPDATED: 20 Oct 2004 (20041020/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> S L11  
L16

1 L11

*1 CA reference from the  
2 polymers*

=> D L16 BIB ABS IND HITSTR

L16 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2001:467938 HCAPLUS  
DN 135:78104  
TI Fluoro elastomers, their production and their vulcanizates  
IN Abe, Katsumi; Tatsu, Haruyoshi  
PA Nippon Mektron, Japan  
SO Ger. Offen., 10 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10063993	A1	20010628	DE 2000-10063993	20001221
	JP 2001181350	A2	20010703	JP 1999-364885	19991222
	US 2001008922	A1	20010719	US 2000-745097	20001220
	US 6380337	B2	20020430		
PRAI	JP 1999-364885	A	19991222		

AB Fluoro rubbers with good resistance to chems. and environmental conditions are based on vinylidene fluoride (VDF) 65-85, perfluoro(methoxypropyl vinyl ether) (MPVE) 0.5-30, tetrafluoroethylene (TFE) 0-10, and perfluoro(alkyl vinyl ether) 0-25 mol% and are prepared in the presence of a haloorg. compound. The elastomers are peroxide-crosslinkable. An example was obtained from VDF, TFE, MPVE, perfluoro(Me vinyl ether), and CF<sub>2</sub>:CFOCF<sub>2</sub>CF<sub>2</sub>Br and subsequently crosslinked using Perhexa 25B (peroxide) and triallyl isocyanurate. The properties were superior to those of an elastomer prepared without MPVE.

IC ICM C08L027-16

ICS C08L035-08; C08L027-18; C08K005-14

CC 39-4 (Synthetic Elastomers and Natural Rubber)

ST fluoro rubber prodn peroxide vulcanization

IT Vulcanization accelerators and agents

(for peroxide vulcanization of fluoro elastomers)

IT Vulcanization

(production and peroxide vulcanization of fluoro elastomers)

IT Fluoro rubber

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)

(production and peroxide vulcanization of fluoro elastomers)

IT 78-63-7, Perhexa 25B

RL: CAT (Catalyst use); USES (Uses)

(catalyst for peroxide vulcanization of fluoro elastomers)

IT 346607-77-0P 346607-78-1P

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)

(rubber; production and peroxide vulcanization of fluoro elastomers)

IT 346607-79-2P 346607-80-5P

RL: IMF (Industrial manufacture); PREP (Preparation)

(rubber; production of peroxide-vulcanized fluoro elastomers)

IT 346607-77-0P

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)

(rubber; production and peroxide vulcanization of fluoro elastomers)

RN 346607-77-0 HCAPLUS

CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)-, polymer with 1,1-difluoroethene, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

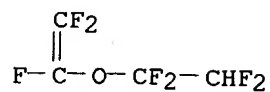
CM 1

CRN 63391-81-1

CMF C4 H F7 O

102(b)?  
However, TFE & VDF  
ratio may be off

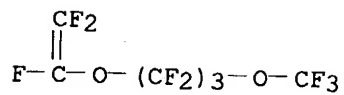




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CRN 40573-09-9

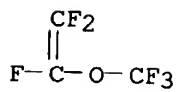
CMF C6 F12 O2



CM 3

CRN 1187-93-5

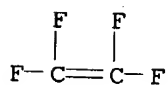
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CM 4

CRN 116-14-3

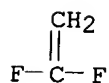
CMF C2 F4



CM 5

CRN 75-38-7

CMF C2 H2 F2



IT 346607-79-2P

RL: IMF (Industrial manufacture); PREP (Preparation)

(rubber; production of peroxide-vulcanized fluoro elastomers)

RN 346607-79-2 HCAPLUS

CN 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tri-2-propenyl-, polymer with

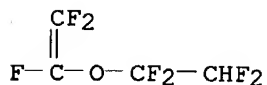
KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

CM 1

CRN 63391-81-1

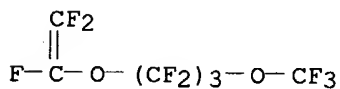
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CM 2

CRN 40573-09-9

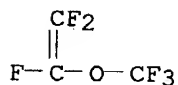
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CRN 1187-93-5

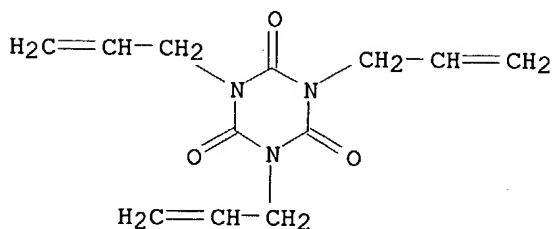
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CM 4

CRN 1025-15-6

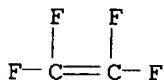
CMF C12 H15 N3 O3



CM 5

CRN 116-14-3

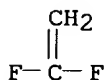
CMF C2 F4



CM 6

CRN 75-38-7

CMF C2 H2 F2



=> => D L14 ALL

L14 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:252553 HCAPLUS

DN 140:272182

ED Entered STN: 26 Mar 2004

TI Perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products

IN Kaspar, Harald; Hintzer, Klaus; Van Gool, Guy; Marz, Franz; Worm, Allan T.; Fukushima, Tatsuo

PA 3M Innovative Properties Company, USA

SO PCT Int. Appl., 27 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C08F014-00

ICS C08K005-14

CC 39-4 (Synthetic Elastomers and Natural Rubber)

Section cross-reference(s): 37

FAN.CNT 1

*applicant*

*Please note  
the structures  
indexed for  
this reference*

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	WO 2004024786	A1	20040325	WO 2003-US28610	20030911
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,				

GW, ML, MR, NE, SN, TD, TG  
 US 2004127661 A1 20040701 US 2003-660437 20030911 <--  
 PRAI US 2002-410225P P 20020912  
 CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

WO 2004024786 ICM C08F014-00  
 ICS C08K005-14

AB A fluoroelastomer with Tg of -25° or below and solvent swell <60 % comprises repeating units derived from 10-40 mol% tetrafluoroethylene, 40-65 mol% of vinylidene fluoride, 1-30 mol% perfluorinated vinyl ether with the formula:  $CF_2 = CFCF_2CF_2CF_2OCF_3$ , 1-20 mol% of perfluoromethyl vinyl ether, and chain transfer agent. The fluoroelastomer is prepared by radical aqueous suspension or emulsion polymerization, and curable with peroxide to obtain a core-shell material. Thus, bromotetrafluorobutene, perfluoromethylether, perfluoromethoxypropyl vinyl ether, tetrafluoroethylene, and vinylidenedifluoride were emulsion radical polymerized in the presence of ammonium peroxodisulfate, and then vulcanized using peroxide catalyst (Trigonox 101 45B).

ST perfluorinated vinyl ether fluoroelastomer fluoropolymer peroxide vulcanization prepn

IT Polymerization  
 (aqueous, radical; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

IT Polymerization  
 (emulsion, radical; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

IT Vulcanization accelerators and agents  
 (perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

IT Fluoro rubber  
 Fluoropolymers, preparation  
 RL: IMF (Industrial manufacture); PREP (Preparation)  
 (perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

IT Polymerization  
 (radical, suspension; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

IT Peroxides, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (vulcanization; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

IT 7727-54-0  
 RL: CAT (Catalyst use); USES (Uses)  
 (perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

IT 261178-84-1, Trigonox 101 45B  
 RL: CAT (Catalyst use); USES (Uses)  
 (vulcanization catalyst; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

IT 673496-31-6P 673496-32-7P  
 RL: IMF (Industrial manufacture); PREP (Preparation)  
 (vulcanized; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE  
 (1) Abe; US 0008922 A1 2001

(2) Nippon, M; US 5891974 A 1999 HCAPLUS

=> SEL RN L14  
E5 THROUGH E8 ASSIGNED

=> FILE REG  
FILE 'REGISTRY' ENTERED AT 11:06:40 ON 22 OCT 2004  
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PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
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Property values tagged with IC are from the ZIC/VINITI data file  
provided by InfoChem.

STRUCTURE FILE UPDATES: 20 OCT 2004 HIGHEST RN 766487-31-4  
DICTIONARY FILE UPDATES: 20 OCT 2004 HIGHEST RN 766487-31-4

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more  
information enter HELP PROP at an arrow prompt in the file or refer  
to the file summary sheet on the web at:  
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> S E5-E8

1 261178-84-1/BI  
(261178-84-1/RN)  
1 673496-31-6/BI  
(673496-31-6/RN)  
1 673496-32-7/BI  
(673496-32-7/RN)  
1 7727-54-0/BI  
(7727-54-0/RN)

L17 4 (261178-84-1/BI OR 673496-31-6/BI OR 673496-32-7/BI OR 7727-54-0  
/BI)

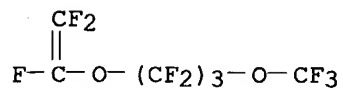
=> D L17 1-4

L17 ANSWER 1 OF 4 REGISTRY COPYRIGHT 2004 ACS on STN  
RN 673496-32-7 REGISTRY  
CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-  
(trifluoromethoxy)-, polymer with bromotrifluoroethene,  
1,1-difluoroethene, oxybis[trifluoromethane] and tetrafluoroethene (9CI)  
(CA INDEX NAME)  
MF (C6 F12 O2 . C2 H2 F2 . C2 Br F3 . C2 F6 O . C2 F4)x  
CI PMS  
PCT Fluoropolymer, Polyether, Polyvinyl  
SR CA  
LC STN Files: CA, CAPLUS, USPATFULL  
DT.CA Caplus document type: Patent  
RL.P Roles from patents: PREP (Preparation)

CM 1

CRN 40573-09-9

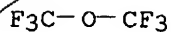
CMF C6 F12 O2



CM 2

CRN 1479-49-8

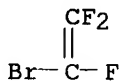
CMF C2 F6 O



CM 3

CRN 598-73-2

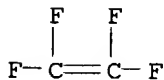
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CM 4

CRN 116-14-3

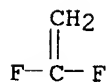
CMF C2 F4



CM 5

CRN 75-38-7

CMF C2 H2 F2



1 REFERENCES IN FILE CA (1907 TO DATE)

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

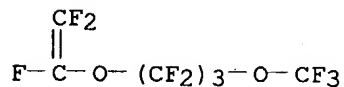
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L17 ANSWER 2 OF 4 REGISTRY COPYRIGHT 2004 ACS on STN  
 RN 673496-31-6 REGISTRY  
 CN 1-Butene, 4-bromo-3,3,4,4-tetrafluoro-, polymer with 1,1-difluoroethene,  
 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-  
 (trifluoromethoxy)propane, oxybis[trifluoromethane] and tetrafluoroethene  
 (9CI) (CA INDEX NAME)  
 MF (C6 F12 O2 . C4 H3 Br F4 . C2 H2 F2 . C2 F6 O . C2 F4)x  
 CI PMS  
 PCT Fluoropolymer, Polyether, Polyvinyl  
 SR CA  
 LC STN Files: CA, CAPLUS, USPATFULL  
 DT.CA CAplus document type: Patent  
 RL.P Roles from patents: PREP (Preparation)

CM 1

CRN 40573-09-9

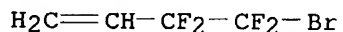
CMF C6 F12 O2



CM 2

CRN 18599-22-9

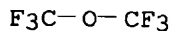
CMF C4 H3 Br F4



CM 3

CRN 1479-49-8

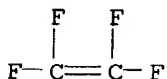
CMF C2 F6 O



CM 4

CRN 116-14-3

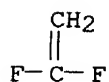
CMF C2 F4



CM 5

CRN 75-38-7

CMF C2 H2 F2



1 REFERENCES IN FILE CA (1907 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L17 ANSWER 3 OF 4 REGISTRY COPYRIGHT 2004 ACS on STN  
RN 261178-84-1 REGISTRY  
CN Trigonox 101-45B (9CI) (CA INDEX NAME)  
ENTE A peroxide curing agent (Akzo Nobel Chemical)  
MF Unspecified  
CI MAN  
SR CA  
LC STN Files: CA, CAPLUS, USPATFULL  
DT.CA CAPLUS document type: Conference; Journal; Patent  
RL.P Roles from patents: USES (Uses)  
RL.NP Roles from non-patents: RACT (Reactant or reagent); USES (Uses)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

5 REFERENCES IN FILE CA (1907 TO DATE)  
5 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L17 ANSWER 4 OF 4 REGISTRY COPYRIGHT 2004 ACS on STN  
RN 7727-54-0 REGISTRY  
CN Peroxydisulfuric acid  $[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$ , diammonium salt (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN Ammonium peroxidodisulfate  
CN Ammonium peroxydisulfate  
CN Ammonium peroxydisulfate  $(\text{NH}_4)_2\text{S}_2\text{O}_8$   
CN Ammonium peroxysulfate  
CN Ammonium persulfate  
CN Bis(ammonium) peroxodisulfate  
CN Diammonium peroxydisulfate  
CN Diammonium peroxydisulphate  
CN Diammonium persulfate  
CN Enplate AD 485  
CN Panreac PA  
DR 398469-95-9  
MF H3 N . 1/2 H2 O8 S2  
CI COM  
LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM\*, DRUGU, EMBASE, GMELIN\*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK\*, MSDS-OHS, NIOSHTIC, PDLCOM\*, PROMT, RTECS\*, TOXCENTER, TULSA, ULIDAT, USPAT2, USPATFULL  
(\*File contains numerically searchable property data)



Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

DT.CA CAPLUS document type: Book; Conference; Dissertation; Journal; Patent; Report

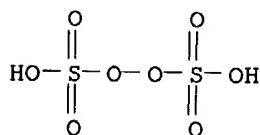
RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)

RLD.P Roles for non-specific derivatives from patents: BIOL (Biological study); PREP (Preparation); PROC (Process); PRP (Properties); USES (Uses)

RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological study); CMBI (Combinatorial study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)

RLD.NP Roles for non-specific derivatives from non-patents: ANST (Analytical study); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)

CRN (13445-49-3)



● 2 NH<sub>3</sub>

5535 REFERENCES IN FILE CA (1907 TO DATE)  
 25 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 5550 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 22 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> => D QUE

*Search by starting monomers*

L1	1	SEA FILE=REGISTRY ABB=ON	TETRAFLUROETHYLENE/CN
L2	1	SEA FILE=REGISTRY ABB=ON	"VINYLIDENE FLUORIDE"/CN
L3	2	SEA FILE=REGISTRY ABB=ON	"MV 31"/CN
L4	1	SEA FILE=REGISTRY ABB=ON	L3 AND C6F12O2/MF
L5	10	SEA FILE=REGISTRY ABB=ON	C3F6O/MF
L6	1	SEA FILE=REGISTRY ABB=ON	L5 AND ETHER
L18	7288	SEA FILE=HCAPLUS ABB=ON	L1 OR TETRAFLUROETHYLENE OR TFE
L19	17453	SEA FILE=HCAPLUS ABB=ON	L2 OR VINYLIDENE FLUORIDE OR VDF
L20	22	SEA FILE=HCAPLUS ABB=ON	L4 OR MV31 OR MV(W) 31
L21	336	SEA FILE=HCAPLUS ABB=ON	L6 OR PMVE OR PERFLUOROMETHYL VINYL ETHER
L22	2	SEA FILE=HCAPLUS ABB=ON	L18 AND L19 AND L20 AND L21

*2 CA references with all 4*

=> D L22 BIB ABS IND HITSTR 1-2

L22 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2004:220056 HCAPLUS

DN 140:254842  
 TI Fluoroelastomers with improved permeation resistance for sealing applications and their manufacture  
 IN Fukushi, Tatsuo; Worm, Allan T.; Hare, Erik D.; Bennett, Gregory S.; Coggio, William D.  
 PA 3M Innovative Properties Company, USA  
 SO U.S. Pat. Appl. Publ., 8 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004054055	A1	20040318	US 2003-659877	20030911
	WO 2004024788	A1	20040325	WO 2003-US28472	20030911
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRAI US 2002-410138P P 20020912

AB The compound is prepared, suitable for forming fluoroelastomers, having the unique features of a low glass transition temperature and desirable permeation resistance. The compound comprises (a) an amorphous copolymer including interpolymd. units derived from  $\geq 1$  perfluorinated ether (e.g., a copolymer of **vinylidene fluoride**, tetrafluoroethylene, perfluoro-3-methoxypropyl vinyl ether and cure site monomer); and (b) a curable component including  $\geq 1$  filler having  $\geq 10$  parts/100 parts. first component (e.g., zinc oxide, carbon black, triallyl isocyanurate and peroxide). Upon vulcanization the resulting elastomeric compound has Shore A hardness  $\geq 60$ , retraction at lower temps. (TR-10)  $\leq -25^\circ$  and permeation rate  $\leq 65$  g-mm/m<sup>2</sup>-d.

IC ICM C08K003-30

NCL 524423000; 524493000; 524451000; 524445000; 524425000; 524434000; 524431000; 524544000

CC 39-9 (Synthetic Elastomers and Natural Rubber)

ST fluoro elastomer improved permeation resistance seal

IT Fillers

Seals (parts)

Vulcanization accelerators and agents

(fluoroelastomers with improved permeation resistance for sealing applications)

IT Peroxides, uses

RL: CAT (Catalyst use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)

IT Carbon black, uses

RL: MOA (Modifier or additive use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)

IT Clays, uses

RL: MOA (Modifier or additive use); USES (Uses)

- (fluoroelastomers with improved permeation resistance for sealing applications)

IT Diatomite

RL: MOA (Modifier or additive use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)
- IT Fluoro rubber

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)
- IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); USES (Uses)

(micropowders; fluoroelastomers with improved permeation resistance for sealing applications)
- IT 80-05-7, reactions 1025-15-6, Triallyl isocyanurate

RL: RCT (Reactant); RACT (Reactant or reagent)

(curing agent; fluoroelastomers with improved permeation resistance for sealing applications)
- IT 78-63-7, Varox DBPH 50

RL: CAT (Catalyst use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)
- IT 471-34-1, Calcium carbonate, uses 1314-13-2, Zinc oxide, uses 1332-37-2, Iron oxide, uses 7631-86-9, Silica, uses 7727-43-7, Barium sulfate 7782-42-5, Graphite, uses 7789-75-5, Calcium fluoride, uses 13463-67-7, Titanium oxide, uses 13983-17-0, Wollastonite 14807-96-6, Talc, uses

RL: MOA (Modifier or additive use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)
- IT 1187-93-5D, Perfluoromethyl vinyl ether, polymers with perfluorinated monomers

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

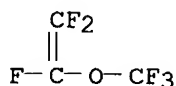
(fluoroelastomers with improved permeation resistance for sealing applications)
- IT 75-38-7D, Vinylidene fluoride, polymers with perfluorinated ethers 116-14-3, Tetrafluoroethylene, uses 40573-09-9D, MV 31, polymers with perfluorinated ethers

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

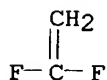
(rubber; fluoroelastomers with improved permeation resistance for sealing applications)
- IT 1187-93-5D, Perfluoromethyl vinyl ether, polymers with perfluorinated monomers

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

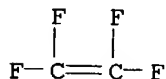
(fluoroelastomers with improved permeation resistance for sealing applications)
- RN 1187-93-5 HCAPLUS
- CN Ethene, trifluoro(trifluoromethoxy)- (9CI) (CA INDEX NAME)



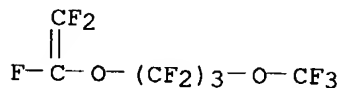
IT 75-38-7D, Vinylidene fluoride, polymers with  
perfluorinated ethers 116-14-3, Tetrafluoroethylene, uses  
40573-09-9D, MV 31, polymers with  
perfluorinated ethers  
RL: POF (Polymer in formulation); TEM (Technical or engineered material  
use); USES (Uses)  
(rubber; fluoroelastomers with improved permeation resistance for  
sealing applications)  
RN 75-38-7 HCAPLUS  
CN Ethene, 1,1-difluoro- (9CI) (CA INDEX NAME)



RN 116-14-3 HCAPLUS  
CN Ethene, tetrafluoro- (9CI) (CA INDEX NAME)



RN 40573-09-9 HCAPLUS  
CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-  
(trifluoromethoxy)- (9CI) (CA INDEX NAME)



L22 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1984:198461 HCAPLUS  
DN 100:198461  
TI Solubility of different fluorine-containing compounds in water and aqueous  
solutions of fluoroorganic surfactants  
AU Veretennikov, N. V.; Reshetova, L. I.; Fil'chakova, T. A.  
CS USSR  
SO Vestnik Leningradskogo Universiteta, Seriya 4: Fizika, Khimiya (1984),  
(1), 112-14  
CODEN: VLUFBI; ISSN: 0024-0826  
DT Journal  
LA Russian  
AB Solubilities were determined at 20° for tetrafluoroethylene,  
hexafluoropropylene, vinylidene fluoride,  
perfluoromethyl vinyl ether,

trifluoroethylene, perfluoromethoxypropyl vinyl ether, and perfluoropropyl vinyl ether. Heats of solution in water were also determined

CC 68-1 (Phase Equilibriums, Chemical Equilibriums, and Solutions)  
Section cross-reference(s): 69

ST fluorine compd soly water surfactant; vinyl fluoro compd soly; ether vinyl fluoro soly

IT Heat of solution  
Solubility  
(of fluorine-containing organic compds., in water and aqueous fluoroorg. surfactants)

IT Surfactants  
(solubilities of fluorine-containing organic compds. in aqueous solns. of)

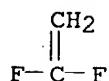
IT 7782-41-4D, organic compds.  
RL: PRP (Properties)  
(solubilities and heats of solution of, in water and aqueous fluoroorg. surfactants)

IT 75-38-7 116-14-3, properties 116-15-4 359-11-5  
1187-93-5 1623-05-8 40573-09-9  
RL: PRP (Properties)  
(solubility of, in water and aqueous fluoroorg. surfactants)

IT 75-38-7 116-14-3, properties 1187-93-5  
40573-09-9  
RL: PRP (Properties)  
(solubility of, in water and aqueous fluoroorg. surfactants)

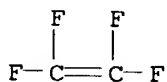
RN 75-38-7 HCAPLUS

CN Ethene, 1,1-difluoro- (9CI) (CA INDEX NAME)



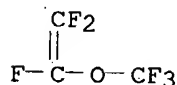
RN 116-14-3 HCAPLUS

CN Ethene, tetrafluoro- (9CI) (CA INDEX NAME)



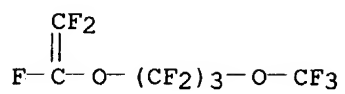
RN 1187-93-5 HCAPLUS

CN Ethene, trifluoro(trifluoromethoxy)- (9CI) (CA INDEX NAME)



RN 40573-09-9 HCAPLUS

CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)- (9CI) (CA INDEX NAME)



=>